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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,197	09/26/2003	Jikai Li	LiQiao/ProactiveEdgeApp	8960

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EXAMINER	
SINKANTARAKORN, PAWARIS	
ART UNIT	PAPER NUMBER
2616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/672,197	LI ET AL.	
	Examiner	Art Unit	
	Pao Sinkantarakorn	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6 and 8-10* is/are rejected.

7)☒ Claim(s) *5 and 7* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

2. Claims 1-10 are objected to because of the following informalities:

Regarding claim 1 line 3, the recitation "the sending a PDU" should be rewritten as ---the sending of a PDU---.

Regarding claim 2 line 1, the term "PDU's" should be rewritten as ---PDUs---. The same is true for claims 3-6 and 10.

Regarding claim 10 line 10, the first "is" should be rewritten as ---if---.

Claims 7-9 are then objected because they depend on the objected claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 8 and 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 8 lines 6-7, the recitation "the methods of U.S. Patent Application 10/366,890" is vague and indefinite because it is unclear what the methods are. The same is true for claim 9 lines 6-8.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-4 are rejected under 35 U.S.C. 102(e) as being anticipated by Onvural et al. (US 7,230,923).

NOTE: Regarding claim 1, the limitation "optionally, delaying a PDU in transit...at said intermediate node" is not given any weight since it is optional.

NOTE: Regarding claims 4 and 5, the limitation "sequential, random" in the parenthesis is not considered a positive claimed limitation; it is suggested to remove it. The same is true for (BORA-V-FS) in claim 10 line 1.

Regarding claim 1, Onvural et al. disclose a method for reducing contention and loss probabilities for PDUs arriving at downstream nodes comprising the steps of:

delaying the sending of a PDU generated at an ingress node beyond the PDU's predetermined minimum offset time, or zero delay, for a maximum delay time (see

column 3 lines 54-65 and column 4 lines 16-25, packets are placed in input queues and they receive timestamps corresponding to the deadline by which they should be transmitted in order to meet the QOS requirements, wherein the amount of the maximum delay is stored as the maximum delay allowed for a traffic stream that is subject to a maximum delay QOS requirement; based on the maximum delay allowed, the packets are delayed for the maximum delay allowed before they are transmitted to other nodes);

regarding claims 2 and 3, PDU's assembled or entering the network at an ingress node are scheduled independently of the method of delay used at intermediate nodes comprising the steps of:

determining a maximum delay requirement (see column 4 lines 16-25, maximum delay allowed),

performing a sequential search in a fixed order among channels for an interval on a channel that satisfies the maximum delay requirement (see column 4 lines 35-38 and column 5 lines 10-17, a sorter searches each input queue sequentially for an input queue that contains a packet, wherein the packets are assigned timestamps, where the timestamps are assigned to each packet is determined based on the maximum delay QOS requirement),

scheduling the PDU into the first search channel identified as having a satisfying interval, and updating the interval information for the identified channel (see column 5 lines 10-17 and column 6 lines 15-23, once the sorter finds an input queue that contains a packet with the maximum delay QOS requirement field, it places the packet in a slot in

the output packet store to be transmitted based on the timestamped deadline of the packets),

dropping the PDU if no channel is identified as having an interval satisfying the maximum delay requirement (see column 5 lines 35-50, if no earlier slots are vacant, then the sorter discards the packet);

regarding claim 4, the scheduling of PDUs assembled or entering the network at an ingress node comprises the steps of:

determining a maximum delay requirement (see column 4 lines 16-25, maximum delay allowed),

performing a search among a few selected channels called the home channels corresponding to the egress node using any order for an interval on a home channel that satisfies the maximum delay requirement (see column 4 lines 35-38 and column 5 lines 10-17, a sorter searches each input queue sequentially for an input queue that contains a packet, wherein the packets are assigned timestamps, where the timestamps are assigned to each packet is determined based on the maximum delay QOS requirement),

scheduling the PDU into the first search channel identified as having a satisfying interval, and updating the interval information for the identified channel (see column 5 lines 10-17 and column 6 lines 15-23, once the sorter finds an input queue that contains a packet with the maximum delay QOS requirement field, it places the packet in a slot in the output packet store to be transmitted based on the timestamped deadline of the packets),

performing a sequential search in a fixed order among the rest, non home channels for an interval on a non home channel that satisfies the maximum delay requirement (see column 4 lines 35-38 and column 5 lines 10-17, a sorter searches each input queue sequentially for an input queue that contains a packet, wherein the packets are assigned timestamps, where the timestamps are assigned to each packet is determined based on the maximum delay QOS requirement),

scheduling the PDU into the first non home channel identified as having a satisfying interval, and updating the interval information for the identified channel (see column 5 lines 10-17 and column 6 lines 15-23, once the sorter finds an input queue that contains a packet with the maximum delay QOS requirement field, it places the packet in a slot in the output packet store to be transmitted based on the timestamped deadline of the packets),

dropping the PDU if no channel is identified as having an interval satisfying the maximum delay requirement (see column 5 lines 35-50, if no earlier slots are vacant, then the sorter discards the packet).

Claim Rejections - 35 USC § 103

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Onvural et al. in view of Luo et al. (US 6,377,551).

Regarding claims 6 and 10, Onvural et al. disclose all the subject matter of the claimed invention except the step of constructing a binary search tree where every leaf node records its associated channel's horizon starting time and each non-leaf node records the least horizon starting value of all of its child nodes. However, the invention of Luo et al. from the same or similar fields of endeavor disclose a method for searching for a route that satisfies the cost and delay constraint in a spanning tree (see abstract).

Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to implement a method for searching for a route that satisfies the cost and delay constraint in a spanning tree as taught by Luo et al. into the packet scheduling and sorting system of Onvural et al.

The motivation for implementing a method for searching for a route that satisfies the cost and delay constraint in a spanning tree is that it increases the efficiency of the system.

Allowable Subject Matter

11. Claims 5 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Miller et al. (US 6,247,058), Kilkki et al. (US 6,549,514, and Chen (US 7,027,456) are cited to show methods/systems considered pertinent to the claimed invention.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pao Sinkantarakorn whose telephone number is 571-

270-1424. The examiner can normally be reached on Monday-Thursday 9:00am-3:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on 571-272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PS

RICKY Q. NGO
SUPERVISORY PATENT EXAMINER